

REMARKS

In response to the Advisory Action mailed May 8, 2002 and the final Office Action mailed May 3, 2002, the Applicants have submitted herewith a Continued Prosecution Application (CPA) and have amended the Application, and seek reconsideration thereof. In this Response, the Applicants have amended Claims 1-3, and added new Claims 4-31. Accordingly, Claims 1-31 are now pending.

The Applicants would like to thank the Examiner for withdrawing the objections to the Specification and the claims in the Office action mailed January 3, 2002.

In the Office Action mailed January 3, 2002, the Examiner rejected Claims 1-3 under 35 U.S.C. § 112, first paragraph, because the Examiner stated that the specification, while being enabling for specific alloy combinations, does not reasonably provide enablement for all of the specific alloy combinations of the invention as claimed in Claims 1-3. Applicants respectfully traverse this rejection. Applicants respectfully submit that Claims 1-3 are enabled by the originally filed Specification. The Detailed Description discloses, "the Cu-based alloy foil includes at least one material selected from nickel, titanium, magnesium, tin, zinc, boron, chromium, manganese, silicon, cobalt, iron, vanadium, aluminum, zirconium, niobium, phosphorous bismuth, lead, silver, and misch metal." (Detailed Description, page 2, line 22 to page 3, line 2.) In Table 1 (on page 5), there are specific groupings of copper-nickel-titanium, copper-nickel-titanium-magnesium, copper-nickel-titanium-magnesium-manganese, and copper-nickel-titanium-magnesium-zinc. These specific groups are just examples of possible groupings that can be achieved from the general group cited above that is found in the Detailed Description. Applicants respectfully submit that the combinations found in Claims 1-3 are enabled by the citations from the Detailed Description, Table 1, read in combination with the rest of the Specification.

In the Office Action mailed January 3, 2002, the Examiner rejected Claim 2 under 35 U.S.C. § 112, second paragraph, for a lack of antecedent basis for the limitations in Claim 2. The Applicants have amended Claim 2 to overcome this rejection based on insufficient antecedent basis.

In the Office Action mailed January 3, 2002, the Examiner rejected Claims 1 and 3 under 35 U.S.C. § 102(e) as being anticipated by Idota et al. ("Idota") (U.S. Patent No. 6,235,427). (The Examiner rejected Claims 1 and 3 in the Office Action dated January 3,

2002 for the same reasons that the Examiner rejected Claims 1-3 in the Office Action of June 13, 2001.)

To the extent that this rejection still applies to the amended claims, the Applicants respectfully traverse this rejection. In addition, the Applicants have filed a translation of Korean Patent Application No. 99-2257 herewith pursuant to M.P.E.P. § 201.15. A certified copy (in Korean) of Korean Patent Application No. 99-2257 was filed with the U.S. Patent and Trademark Office on September 13, 2001. Korean Patent Application No. 99-2257 was filed in Korea prior to the Idota filing date of May 11, 1999. In addition, the Applicants are filing herewith a Rule § 1.131 Affidavit establishing an invention date for Applicants' invention prior to the Idota filing date of May 11, 1999. Therefore, Applicants respectfully submit that Idota is not prior art to the present application under 35 U.S.C. § 102(e).

In the Office Action mailed January 3, 2002, the Examiner rejected Claims 1-3 under 35 U.S.C. § 103(a) as being unpatentable over Kawakami et al. ("Kawakami") (U.S. Patent No. 5,702,845) in view of Idota. (The Examiner rejected Claims 1-3 in the Office Action of January 3, 2002 for the same reasons that the Examiner rejected these claims in the Office Action of June 13, 2001.)

To the extent that this rejection still applies to the amended claims, the Applicants respectfully traverse this rejection. Applicants respectfully submit that neither the Idota nor the Kawakami reference teach an "electro-plating process" as required by the amended claims.

In addition, the Applicants have filed herewith a translation of Korean Patent Application No. 99-2257, as discussed above, and have also filed herewith a Rule § 1.131 Affidavit establishing the Applicants' invention date prior to the Idota filing date of May 11, 1999.

Therefore, Applicants respectfully request that the Examiner withdraw the rejections to the Applicants' claims under 35 U.S.C. § 102 and 35 U.S.C. § 103.

Applicants hereby petition for a three month extension of time to respond to the outstanding Final Office Action mailed January 3, 2002 and Advisory Action mailed May 8, 2002. Applicants previously petitioned for a one month extension of time with the response filed April 24, 2002. Our check in the amount of \$810.00 to cover the balance due for the petition fee is submitted herewith. Please credit any overpayment

or charge any additional amount due to Deposit Account 02-2666. A duplicate of the Fee Transmittal sheet is submitted herewith.

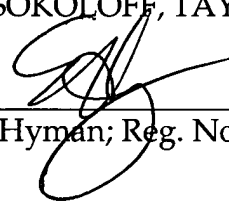
CONCLUSION

In view of the foregoing, it is believed that all claims now pending are neither obvious nor anticipated by the relied upon art of record, and are in condition for allowance. A Notice of Allowance is earnestly solicited at the earliest possible date. If the Examiner believes that a telephone conference would be useful in moving the Application forward to allowance, the Examiner is encourage to contact the undersigned agent at (310) 207-3800. If there are any fees due in connection with the filing of this Response, please charge Deposit Account No. 02-2666.

Respectfully submitted,

BLAKELY, SOKOLOFF, TAYLOR & ZAFMAN LLP

Dated: 6/17/02

By: 
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CERTIFICATE OF MAILING:

I hereby certify that this correspondence is being deposited as First Class Mail with the United States Postal Service in an envelope addressed to: Assistant Commissioner for Patents, Washington, D.C. 20231 on June 17, 2002

Nedy Calderon
Nedy Calderon

6/17/02
Date

ATTACHMENT: VERSION WITH MARKINGS TO SHOW CHANGES MADE



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IN THE SPECIFICATION

The paragraph at page 2, lines 6-17 has been replaced as follows:

These and other objects may be achieved by a lithium secondary battery including a positive electrode formed by coating lithium metal oxides on a positive current collector, and a negative electrode formed by coating carbonaceous materials or SnO_2 on a negative current collector. The negative current collector is made of a Cu-based alloy foil with a thickness of 20 μm or less and the Cu-based alloy foil includes at least one material selected from the group consisting of nickel, titanium, magnesium, tin, zinc, boron, chromium, manganese, ~~silicon~~silicon, cobalt, iron, vanadium, aluminum, zirconium, niobium, phosphorous, bismuth, lead, silver, and misch metal. The lithium secondary battery further includes a separator interposed between the positive and negative electrodes and an electrolyte into which the positive and negative electrodes and the separator are immersed.

The paragraph at page 2, line 22 to page 3, line 16, has been replaced as follows:

The Cu-based alloy foil includes at least one material selected from nickel, titanium, magnesium, tin, zinc, boron, chromium, manganese, ~~silicon~~silicon, cobalt, iron, vanadium, aluminum, zirconium, niobium, phosphorous bismuth, lead, silver and misch metal. The amount of nickel is 0.8 to 4 wt% of the copper, that of titanium is 0.2 to 4 wt% of the copper, that of magnesium is 0.05 to 0.6 wt% of the copper, and that of tin is 0.1 to 2.0 wt% of the copper. The amount of zinc is 0.0005 to 0.5 wt% of the copper, that of boron is 0.0005 to 5.0 wt% of the copper, that of boron is 0.0005 to 5.0 wt% of the copper, that of chromium is 0.0005 to 0.5 wt% of the copper, and that of manganese is 0.1 to 1.0 wt% of the copper. The amount of ~~silicon~~silicon is 0.1 to 0.5 wt% of the copper, that of iron or cobalt is 0.01 to 2.0 wt% of the copper, that of vanadium is 0.0005 to 0.5 wt% of the copper, and that of aluminum is 0.005 to 0.5 wt% of the copper. The amount of zirconium is 0.0005 to 0.5 wt% of the copper, that of niobium is 0.0005 to 0.5 wt% of the copper, that of phosphorous is 0.02 to 0.16 wt% of the copper, that of bismuth is 0.0005 to 0.5 wt% of the copper, that of lead is 0.0005 to

0.5 wt% of the copper, and that of silver is 0.0005 to 0.5 wt% of the copper. If the materials are out of this range, it is ~~difficulty~~difficult to obtain a foil having the desirable tensile strength.

IN THE CLAIMS

The claims are amended as follows.

1. (Twice Amended) A lithium secondary battery comprising:
a positive electrode formed by coating a lithium metal oxide on a positive current collector;
a negative electrode formed by coating carbonaceous materials or SnO_2 on a negative current collector, where the negative current collector is made of a Cu-based alloy foil with a thickness of 20 μm or less and the Cu-based alloy foil is prepared by adding at least one material selected from the group consisting of magnesium, tin, boron, chromium, manganese, ~~silicone~~, cobalt, vanadium, zirconium, niobium, ~~phosphorous~~, bismuth, lead, silver, and misch metal to a copper-based material selected from the group consisting of copper, copper/nickel, copper/titanium, and copper/nickel/titanium, wherein the Cu-based alloy foil is produced by a plating process;
a separator interposed between the positive and negative electrodes; and
an electrolyte into which the positive and negative electrodes and the separator are immersed.
2. (Amended) The lithium secondary battery of claim 1 wherein ~~the~~an amount of nickel is 0.8 to 4 wt% of copper, ~~the~~an amount of titanium is 0.2 to 4 wt% of copper, ~~the~~an amount of magnesium is 0.05 to 0.6 wt% of copper, ~~the~~an amount of tin is 0.1 to 2.0 wt% of copper, ~~the amount of zinc is 0.0005 to 0.5 wt% of copper,~~ ~~the~~an amount of boron is 0.0005 to ~~5.00.5~~ wt% of copper, ~~the~~an amount of chromium is 0.0005 to 0.5 wt% of copper, an amount of manganese is 0.1 to 1.0 wt% of copper, ~~the amount of silicone is 0.1 to 0.5 wt% of copper,~~ ~~the~~an amount of ~~iron or~~ cobalt is 0.01 to 2.0 wt% of copper, ~~the~~an amount of vanadium is 0.0005 to 0.5 wt% of copper, ~~the amount of aluminum is 0.005 to 0.5 wt% of copper,~~ ~~the~~an amount of zirconium is 0.0005 to 0.5

wt% of copper, ~~the an~~ amount of niobium is 0.0005 to 0.5 wt% of copper, ~~the amount~~
~~of phosphorous is 0.02 to 0.16 wt% of copper,~~ ~~the an~~ amount of bismuth is 0.0005 to 0.5
wt% of copper, ~~the an~~ amount of lead is 0.0005 to 0.5 wt% of copper, and ~~the an~~ amount
of silver is 0.0005 to 0.5 wt% of copper.

3. (Twice Amended) A method for making a lithium secondary battery
comprising ~~the steps of~~:

forming a positive electrode by coating a lithium metal oxide on a positive
current collector;

forming a negative electrode by coating carbonaceous materials or SnO_2 on a
negative current collector, where the negative current collector is made of a Cu-based
alloy foil with a thickness of 20 μm or less and the Cu-based alloy foil is prepared by
adding at least one material selected from the group consisting of magnesium, tin,
boron, chromium, manganese, ~~silicone~~, cobalt, vanadium, zirconium, niobium,
~~phosphorous~~, bismuth, lead, silver, and misch metal to a copper-based material selected
from the group consisting of copper, copper/nickel, copper/titanium, and
copper/nickel/titanium, wherein the Cu-based alloy foil is produced by a plating
process;

interposing a separator between the positive and negative electrodes; and
injecting an electrolyte to immerse the positive and negative electrodes and the
separator.

New claims 4-31 are added.